

Severity of Hydrological Drought in the Lui River Basin, Hulu Langat, Selangor

ABSTRACT

Hydrological drought is a phenomenon of extreme water shortage that have an impact on human life. The impact of the drought depends on the severity of a drought. The severity of hydrological drought events can be described through a period of drought or total deficit. Long periods of drought and high amount of water deficit are important indicators of the extreme drought. Therefore, this article attempts to look at the severity of the drought in Lui River, Hulu Langat, Selangor. In the context of this study, the overrun (percentile - Q) than the flow duration curve (FDC) is used to determine the drought. 48 years of discharge data for Lui station was used to determine the value of Q. Using percentile $Q_{70} = 1.15 \text{ m}^3 \text{ s}^{-1}$ as the threshold level (TL) drought base obtained from FDC, available discharge duration and the amount of the deficit resulting vary according to grade of the drought severity. Based on the analysis, the cumulative period of drought was 2061 days at PAQ_{70} , 1742 days at PAQ_{80} , 542 days at PAQ_{90} and 204 days at PAQ_{95} . The longest period of drought events recorded in 1989, namely 250 days. In terms of cumulative deficit, a total of $1183 \text{ m}^3 \text{ s}^{-1}$ recorded at PAQ_{70} , $598 \text{ m}^3 \text{ s}^{-1}$ at PAQ_{80} , $116 \text{ m}^3 \text{ s}^{-1}$ at PAQ_{90} and $30 \text{ m}^3 \text{ s}^{-1}$ at PAQ_{95} . The highest deficit was recorded in 2001 ($148 \text{ m}^3 \text{ s}^{-1}$). Form these figures, 49.5% were categorized as Normal Drought ($Q_{70} - Q_{79.9}$), 40.7% are categorized as Slight Drought ($Q_{80} - Q_{89.9}$), 7.3% were categorized Moderate Drought ($Q_{90} - Q_{94.9}$) and the remaining 2.5% is classified Severe (Q_{95} and above).